

three or four feet across, of loose soil, freed from all roots of scrub or grass,—the history and use of which are at present unknown to me. Although a very shy bird naturally, attempts to domesticate it by rearing the young under a common fowl have succeeded sufficiently to induce further efforts, with greater care for the safe custody of the chicks.

A nest of the Lyre-tailed Pheasant will be forwarded to the Museum when an opportunity occurs for its transmission, by land or sea, from this presently inaccessible locality.

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ART. III.—*On the Phenomena attending an Interesting Case of Mirage.* By Professor WILSON, M.A., *Melbourne University.*

[Communicated to the Institute 4th February, 1857.]

ON Sunday, 18th January last, about a quarter before two o'clock, I observed an interesting case of Mirage on the Sydney road. I was standing about twenty yards from the south-east entrance to the Royal Park, looking towards Brunswick. The road here is three chains wide, very dusty, bounded on the left by the trees of the Royal Park, and on the right by those of the Prince's Park; at the farther end, distant about a mile and a quarter, the "Sarah Sands Hotel," is visible and some trees with a well-marked outline. On the day in question the house and trees appeared to rise out of a lake, brilliantly illuminated by the sun, and in parts slightly agitated by the wind, but not so as to interfere with a very distinct inverted image of the house and trees formed by reflexion in the seeming water.

My position was at the foot of a slight rise in the road, the summit of which, at the distance of a few yards, was nearly on a level with the eye. The sandy surface of the ground was much heated by the sun, and at the same time a cool south wind was blowing briskly, so that the air, heated and rarified by contact with the ground, was rapidly cleared off by the cool wind, leaving only a thin film of rarified air along the surface of the ground. The rays of light from the sky, and objects at a distance of more than a mile incident on the surface of this rarer medium at nearly a right angle, suffered reflexion in a manner very analogous to that known as total internal reflexion, and thus produced the inverted

images, and the appearance of water. On advancing up the ascent, so as to raise the eye, and thus diminish the angle of incidence of the rays which entered it, the lake contracted, appeared discontinuous, as if studded with islands, and disappeared. It reappeared again on placing the eye in the first position.

The same appearance was observed on the following Sunday, under similar circumstances.

The phenomenon is a well-known one; but every instance of its occurrence in a locality where it has not been previously observed is worthy of record, and the collection of trivial scientific facts is one of the objects of a scientific society.

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ART. IV.—*On the Cestracion Philippi (Port Jackson Shark), Trigonina and Terebratulina of the Australian Seas.* By SIZAR ELLIOTT, Esq.

[Read before the Institute 4th March, 1857.]

THIS fish belongs to the Placoid order, or Sharks, (by the arrangement of M. Agassiz), and forms the only living example of the family of Cestracions (*Cestraciontidae*), the members of which are distinguished from all other sharks by having the teeth flattened, and formed for grinding. Numerous genera of this family are abundant in the Mesozoic rocks of Europe, and all Naturalists and Geologists seemed hitherto to have been of opinion that they abound also in the Palæozoic Rocks; but Professor M'Coy, in his last work on the "British Palæozoic Fossils," proves that the succession of the teeth in the Mountain Limestone Genus *Cochliodus* (which was hitherto supposed to be a fossil-shark's jaw of the type of cestracion, and which furnished the key to Agassiz for grouping all the Palæozoic blunt fish-teeth of the Palæozoic Rocks with the Cestracions), was from below upwards, and that they were not on a rotating membrane, succeeding each other from behind forwards, so that, according to Professor M'Coy, the supposed Palæozoic cestracions belong in fact to the *bony* fishes, and not to the sharks at all: in other words M. Agassiz is in error in grouping the blunt fish-teeth of the mountain limestone with the blunt fish-teeth of the Mesozoic Rocks; the former having their teeth progressing from behind forwards, the latter from below upwards.

However the fact of greatest interest remains of the great